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GARDEN AND FOREST.

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TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—The Plant Doctor . . . 421
Corlears Hook Park. (With plan.) . . . 422
Native Trees and Shrubs about Montreal, Canada.—V. . . . *J. G. Jack.* 423
FOREIGN CORRESPONDENCE:—London Letter . . . *W. Watson.* 424
NEW OR LITTLE-KNOWN PLANTS:—Cypripedium Arnoldiæ. (With figure.) *A. Dimmock.* 425
PLANT NOTES . . . 425
CULTURAL DEPARTMENT:—Some Hardy Grasses . . . *R. Cameron.* 426
Gloriosa superba . . . *E. O. Orpet, T. E., Theodore L. Mead.* 426
The Vegetable Garden . . . *W. N. Craig.* 428
Violets . . . *E. O. Orpet.* 428
Juneberry Success . . . *Samuel B. Greene.* 428
Tricyrtis hirta . . . *J. N. G.* 429
CORRESPONDENCE:—Aquatics in Central Park . . . *J. N. G.* 429
The Buck Bush . . . *Sadie M. Price.* 429
Our Native Elders . . . *Dorcas E. Collins.* 429
The Persimmon . . . *E. P. P.* 429
RECENT PUBLICATIONS . . . 429
NOTES . . . 430
ILLUSTRATIONS:—Cypripedium Arnoldiæ, Fig. 67 . . . 425
Plan of Corlears Hook Park, New York, Fig. 68 . . . 427

The Plant Doctor.

IN the course of an essay before the last meeting of the American Carnation Society, Professor Arthur said:

We will suppose that something is wrong with the Carnation bench. There seems to be no indication of insect work, and so fungi are suspected. What next? The best plan would be to call an experienced specialist, a plant doctor, a practical vegetable pathologist, and accept his diagnosis. At present this is an unusual proceeding, but the time will doubtless come when it will be as common and thought as sensible a practice as it is now to call a doctor for one's horses or one's children.

Professor Arthur's suggestion seemed to the editor of *The Florists' Exchange* to have much pertinence, and he therefore wrote to several men of science, whose official position makes it necessary for them to study plant-diseases, and asked them to give in outline what they considered the requirements and appropriate field of a practical vegetable pathologist. The letters are so interesting that we give the central thought of each.

Mr. E. G. Lodeman, Instructor in Horticulture at Cornell University, observes that plant-diseases and their remedies do not behave in an identical manner in different seasons, and that treatments made one year will not necessarily be advantageous in other years. He, therefore, thinks that a community could profitably unite and employ a man to look after the welfare of the plants in the neighborhood, and he adds that this practice has been adopted in some foreign countries.

Professor Atkinson, Cryptogamic Botanist to the Cornell Experiment Station, also suggests that communities of growers invite a competent man to look after the health of their crops. They should fit up a small laboratory, with a microscope, spraying apparatus and a few other things, and engage an expert on a salary for the season.

Dr. W. C. Sturgis, Mycologist of the Connecticut Experiment Station, believes that florists and nurserymen might, with profit, consult a specialist who is able to diagnose the diseased conditions of plants, whether they are due to lack or excess of nutrition, to unfavorable hygienic conditions, or to attacks by fungi or insects. Having determined the cause, the specialist ought to be able to prescribe a beneficial course of treatment. Practical florists and nurserymen might place a portion of their stock at the specialist's disposal for the purpose of scientific study. He thinks the lack of co-operation between practical growers and scientists heretofore has been due to the fact that the value of scientific knowledge has been underrated by the former class. Dr. Sturgis objects to the name of "plant doctor" as being akin to "herb doctor," which has become a term of ill repute. It may be added, that Dr. Atkinson also objects to the title, because it tends to belittle the calling in the same way that the term "horse doctor" has belittled the profession of the veterinarian.

Dr. Galloway, Chief of the Division of Vegetable Pathology in Washington, thinks that the time is rapidly nearing when the plant doctor, or, as he chooses to call him, the phytopathologist, will be quite as legitimate a factor in society as the veterinarian. Plants will always have an æsthetic and economic use, and as population increases there will be need to produce plants as economically as possible. They must, therefore, be kept in perfect health, and the work of the phytopathologist will be to diagnose and prescribe for diseases in various forms, and to study plant-hygiene in order to establish conditions for the best development of the plant. Of course, in the treatment of plant-diseases there will be the danger of quackery, just as there is in the practice of medicine, but in the matter of plant-hygiene the phytopathologist will have an important field in studying the conditions which will insure ideal plants economically considered, so that he can, in given instances, point out causes for failures and reasons for success. No man can hope to become an expert in the growth of all plants. Specialists will, therefore, have to limit their fields.

Dr. Halsted, Botanist of the Experiment Station of New Jersey, calls attention to the fact that the colleges and experiment stations disseminate so much information about plant-diseases that nurserymen and vineyardists already talk learnedly of fungi, copper salts and spraying-machines, and they begin to have some faith in the plant pathologist after he has saved a crop of grapes or pears. The botanists of the stations oftentimes save much money for fruit-growers by prescribing treatment, but the man who actually treats the tree or vine—that is, who does the spraying, for example—needs to be instructed and trained. Dr. Halsted hopes to have a man next year expert in mixing fungicides and applying them, who can go from one place to another, and begin the work of spraying and instruct farmers how to continue it. A practical sprayer who has learned the art and science of fungicidal applications ought to find a place ready. Nurserymen might be the first to ask assistance, and even now leading men in this business are looking for such an expert.

Professor S. T. Maynard, of the Massachusetts Agricultural Experiment Station, enumerates the subjects in science and practice in which a plant physician should be skilled, and they make a formidable list. When he has mastered them, however, he should be able to diagnose diseases of plants as the veterinarian diagnoses the diseases of animals, and he ought to be able to apply remedies or supply conditions by which plants may be cured and crops saved. Such a calling ought to be remunerative, for the loss by disease amounts to millions, and the doctors should be allowed a liberal percentage on the values saved. The Government is doing much in the experiment stations, but there is no reason why a disease which attacks garden crops should be treated and cured at the public expense any more than a disease which attacks animals, and, although by the knowledge of plant-diseases which is scattered broadcast over the land, the ordinary farmer will soon learn to apply simple remedies of great value, still there will always be a field for the true physician who spends his entire time in studying and curing the diseases of plants.

Professor Taft, of the Michigan Agricultural College, thinks that the increase of plant-diseases makes the vegetable pathologist a necessity. He would have a different

place from the family physician or the veterinarian, his true field being the study of diseases as they appear, with the testing of remedies and the dissemination of the knowledge thus obtained. He would, therefore, be of necessity a public officer, to whom samples of diseased plants could be sent for diagnosis, or he might be sent for at some point where there is a severe outbreak of a new disease. The experiment stations in all the states fairly fill this position now by correspondence, bulletins, etc. With the information thus obtained, every gardener may in time become his own plant doctor under ordinary circumstances, and when any new disease appears he can obtain the needed assistance from the stations.

Now, there can be no question as to the immense value of the investigations which have been made by mycologists in recent years. Many orchards and vineyards in this country, in which no fruit could be raised on account of some infectious disease, have been restored to health and productiveness, and the most dreaded foes of many field-crops have been practically vanquished. It is to the painstaking researches of botanists that the true character of such diseases as the black-knot, the apple-scab, the grape-mildew and the potato-rot has become known, and the discovered facts have been so widely disseminated, and the curative treatment of these maladies has been made so plain, that they may be fairly considered under control. There can be no doubt, either, as the years pass on, that the work of the vegetable pathologist will be of still greater importance. But, after all, it is plain that the therapeutic treatment of diseased plants will never furnish an occupation at all analogous to the practice of medicine either among men or animals. In the first place, the symptoms of plant-diseases are not so sharply defined, nor are these diseases so quickly affected by medicine as are the diseases of men or animals. A fruit-grower might never suspect any trouble with his apple-crop until it was past cure. Even if he suspected a disease he would be inclined to delay and trust to luck or the weather, especially when he can get no distinct proof to establish his shadowy apprehensions; but if his child were ill he would at once send for a physician, and if his horse were injured he would call in a veterinarian, provided the doctor's fee is warranted by the value of the horse. The veterinary surgeon may visit the horse every day, or several times a day, and make as many charges as he makes visits, and when he kills or cures his horse he can get his fee just as the physician can who treats the ailing child. But if the vegetable pathologist is called to see an orchard or a bench of Carnations he would not be expected to call again the next day and see how his patient is doing, and in this way the plant-physician could rarely make a sufficient number of calls to support him as a veterinarian is supported by a number of small fees. When a child is ill the physician is not able to carry a piece of him away for examination at leisure, for the delay may mean death; but very frequently a plant-doctor would need to carry away some material from the diseased plants for investigation. Such investigation requires a great deal of time, a well-equipped laboratory and many assistants. Most people would hesitate before they would pay a competent man for the study and work that might be required to find the disease and apply the needed remedy to a bench of Carnations or a field of Potatoes.

What might be done is suggested in some of the letters to which we have referred. The farmers or fruit-growers in a certain district might unite to employ a salaried expert to investigate and advise them just as certain large brewing companies employ a botanist on a salary to examine their yeast and see that it is pure. But there is no analogy between the position of such an expert and that of a doctor of medicine. Another suggestion is that if agriculturists and horticulturists cannot learn how to treat their plants for the ordinary diseases of crops, a class of professional sprayers could be educated in the methods of mixing and applying fungicides, but these would not be physicians, but rather nurses, who would follow out the prescription of the plant pathologist. There seems, therefore, to be a field for these two kinds of salaried experts, vegetable pathologists and practical germ destroyers. But Professor Taft's idea that every gardener will in time become his own doctor is not a wild one. The experiment stations and agricultural colleges have taught farmers a great deal about animal husbandry, particularly about the proper rations to feed for milk or for meat or for work. From the same sources farmers have learned much about fertilizers, and it will hardly be thought that they need soil doctors to cure their enfeebled acres. In the same way farmers' sons ought to acquire sufficient skill to administer ordinary remedies to ailing plants, and surely the time ought not to be far away when graduates of agricultural colleges will be able to distinguish fungous diseases and know practically what to do for them. When a new disease or a new insect begins its ravages the stations or the colleges will always be ready to furnish the needed advice.

Corlears Hook Park.

SOME years ago an act was passed by the Legislature of New York condemning the land in this city lying south of Cherry Street and extending from Corlears Street on the east to Jackson Street on the west, and devoted it to public use as a park, which was to be known as Corlears Hook Park. This square contains nearly ten acres of land, and was originally one of the most densely populated portions of the city. After many delays the buildings have been removed and the money has been appropriated to construct a park on a design by Mr. Calvert Vaux, Landscape Architect of the Department of Parks, which we produce on page 427. It will be observed that there are entrance-gates on the east and west opposite Front Street and Water Street. Between these pairs of gates moderately direct walks have been made to take the place of the present street lines in such a way that the general movement to the east and west will not be impeded. To guard against crowding, these walks are spacious, being eighteen feet wide at the narrowest point. The broad walk near the water-front with a concourse, marked *A B*, where seats are arranged under shade-trees, is an interesting feature for visitors who use the park simply as a pleasure-ground. A large greensward area is left open in the central section of the park, and another, but smaller one, to the north of it. The borders of these areas of turf will be planted with shade-trees, such as Lindens and Elms, and seclusion from the street will be secured by lines of leafy trees, like Maples, along the outer boundaries, and among them strong-growing shrubs of such kinds as will thrive in densely peopled portions of the city. In the south-west portion of the park an area, *C C*, of somewhat oval form and one hundred and fifty feet long, has been arranged for a shaded playground for the children, and an area about the same size in the opposite corner, marked *D D*, can be used for the same purpose, if it is needed, and, if it is thought desirable, a music-stand can be erected at the point, *M*. Near the northern boundary lavatories are provided, and the upper parts of the structure, *S T*, can be arranged for use as an outlook, giving an agreeable view of the park and the river beyond. The street-trees on the surrounding curb line are about fifty feet apart, and they are arranged, it will be observed, so that there is no tree at either of the exterior angles. It has been found that trees at such angles are much more liable to injury by horses and wagons when turning corners sharply than at any other point.

The people of this part of the city are to be congratulated on the prospect of this opening among the tenement-houses with its bit of verdure. It is the only park facing the East River, with the exception of the little Rutgers Square, between Jeanette Park, which lies near the Battery, and the interesting East River Park, which is rather larger than Corlears Hook Park, and extends northward above Eighty-fourth Street. The river in front of the new park broadens out to include Wallabout Channel, so that

the water view is somewhat extensive, and it is always animated. The plan seems admirably adapted to make the most of the situation.

Native Trees and Shrubs about Montreal, Canada.—V.

SALIX NIGRA, the Black Willow, is common, usually growing in low, wet ground and the borders of swamps, ponds or streams. Though generally a small tree, or sometimes shrub-like, it is frequently found between thirty and forty feet in height and with a trunk over a foot in diameter. Its narrow, light green foliage makes it one of the most distinct of our native deciduous trees.

Salix amygdaloides, the Peach-leaved Willow, or Western Black Willow. The eastern and northern ranges recorded for this species are Cayuga and Wayne Counties, in New York state, and it is interesting to find this Willow so far down the St. Lawrence valley. In Macoun's *Catalogue of Canadian Plants*, its known eastern range on Canadian soil is given as the Red River, in Manitoba. It occurs on Montreal Island, on low ground just north of the city and at other points, and on the south shore of the St. Lawrence, and is frequent along or near the banks of the Chateauguay River for at least two or three miles from its mouth. Here there are trees thirty or forty feet high, and with trunks fully a foot in diameter. They grow with S. nigra, which they resemble in trunk and bark, but the much larger lanceolate dark-colored leaves, pale on the under surface, and on longer slender petioles, give them a different aspect. This Willow is probably more common than is generally known, but is passed by as some introduced species or as a form of S. nigra. S. lucida, the Shining Willow, is common in wet places, its large shining leaves making it a handsome shrub.

Salix longifolia, the Long-leaved Willow, is an interesting plant, of which some large groups are to be found along the sandy or gravelly shores of the St. Lawrence, above the mouth of the Chateauguay River. Here it is never more than a shrub, usually six or eight feet high, the stems one or two inches in diameter, and usually growing closely together and giving no hint of the arborescent habit which the same species is said to attain in the far west. S. rostrata, the so-called Beaked Willow, is very common and frequently assumes the habit of a small tree.

Salix discolor, the Glaucous Willow, is abundant on low grounds or in swampy places. It is one of the earliest Willows to throw off its bud-scales and expose its silky catkins, and on plants in the vicinity of constantly flowing springs these little undeveloped catkins may often be found, in the month of January, without their scale-covering. It often assumes a small tree-like form. S. humilis, the so-called Prairie Willow, which much resembles the last species and often hardly distinguishable from it, is usually found on drier ground. S. sericea, the Silky Willow, is abundant in moist places, and the closely allied S. petiolaris occurs with it and is often not easily distinguished. The narrow, attractive foliage of both species seems very liable to attack by a species of mildew similar to that which affects the leaves of Lilacs. S. cordata, Muhl., the Heart-leaved Willow, is very common and extremely variable, and seems to hybridize freely with the Silky and other Willows, thus producing many intermediate and puzzling forms.

Probably two or three other species of native Willows are to be found in this locality, especially along the south shore of the St. Lawrence. The foreign Willows are represented by the White Willow, S. alba, of Europe, which is very common and naturalized, and by other species.

Populus tremuloides, the American Trembling Aspen, is commonly found growing with, or in similar localities, as the small White or Gray Birch, Betula populifolia. It is usually only a small tree. P. grandidentata, the Large-toothed Aspen, is not generally so plentiful as the last species, but it becomes a very much larger and finer-proportioned tree. P. balsamifera, the Balsam Poplar Tacamahac, or Balm of Gilead, as it is often called, is occasionally found in the woods, sometimes as fine large trees, with tops rising above the Maples and other surrounding trees. The different individuals show considerable variation in foliage, the leaves of some approaching those of the so-called variety Candicans in form. Both the type and the variety are planted for shade or ornament.

Populus monilifera, the Cottonwood or Necklace Poplar, is common, chiefly near the banks of rivers or streams, and grows to a large size, with open, broad, spreading branches. While it is, perhaps, not the largest example in the region, as fine and as symmetrical a specimen as may be seen is growing at Chateauguay Basin, near the banks of the Chateauguay River, and a couple of miles above its mouth. This tree is said to have been not much more than a sapling within the memory of some of the older inhabitants. Its trunk now measures fully eighteen feet in smallest circumference; it divides into three large limbs at fifteen or twenty feet from the ground, and the branches cover an area more than a hundred feet in diameter. The tree is staminate, and annually produces enormous quantities of pretty purplish red catkins, which are in striking contrast to the greenish yellow color of the catkins of the pistillate or fruit-bearing trees. The species bears every appearance of being indigenous, though by some thought to have been brought from the west. P. alba, the White Poplar or Abele of Europe, and the Lombardy Poplar have been planted, and occasionally have spread somewhat by suckers from the roots.

Pinus Strobus, the White Pine, is the common, and now, apparently, the only indigenous Pine in the vicinity of Montreal. Few large trees remain in woods where they were once very abundant, but groves of younger trees are frequent. The more local Red Pine, P. resinosa, seems to have been a native of this vicinity, although I do not now know of any living wild specimens.

Picea alba, the White Spruce, is the common species of its genus, and, although the original large trees have been mainly cut away, new growths are frequent. Grown singly it forms a handsome, compact, cone-shaped tree, some forms slightly approaching the Colorado Blue Spruces in the glaucous aspect of their foliage. So far I have not yet detected the Black Spruce, P. nigra, here, although it would naturally be expected. It may yet be found. It is generally said that these two species of Spruce may be best distinguished by the differences in their cones, but the cones of what is called P. nigra show great variation when compared from different regions, some of the cones at first sight hardly being distinguishable from those of P. alba. It seems probable that a third eastern species or distinct variety may yet be established, as is maintained by some authors.

Abies balsamea, the Balsam Fir, is common in swamps, although sometimes found naturally in drier ground.

Tsuga Canadensis, the Hemlock, is plentiful still in some localities, but great quantities have been destroyed for the tan-bark, and the tree is now in local demand for rough lumber on account of the scarcity of Pine.

Larix Americana, the Larch or Tamarack, more rarely called Hackmatack, was once abundant enough to form "Tamarack-swamps," but is now much less common, and generally found growing with many other kinds of deciduous trees.

Thuya occidentalis, the Arbor-vitæ, or Cedar or White Cedar, as it is almost universally called in this region, is common on rocky moist soils, in swamps or near water. The wood is so much sought for poles, posts, rails and other purposes that trees now are rarely allowed to grow large, but if allowed to attain maturity the rapidly tapering stems may be two feet or more in diameter near the base and fifty or more feet high. As the trunks get old the heart is very liable to decay. Young plants are often taken directly from the woods and planted for hedges in much drier ground, and thrive well if not at once exposed

to too much sun and heat. As a tree the Arbor-vitæ will stand well in exposed situations, as is shown by fine specimens growing on rocky banks on the south shore of the St. Lawrence at Chateauguay, facing the cold winds from the north, and at other points.

Taxus Canadensis, the little American Yew or Ground Hemlock, is common in moist places, and is most frequently seen under Hemlocks and other evergreens. It is always a low spreading shrub, never assuming a tree-like habit. While described as usually dicœcious, it will be found that most mature plants bear both staminate and pistillate flowers on the same stem.

It is to be understood that the foregoing list is merely a preliminary and rough enumeration of the trees and shrubs growing on Montreal Island, or on the opposite southern shore of the St. Lawrence, intended to give an idea of the ligneous vegetation. A careful exploration and study of the flora will undoubtedly show a considerable addition to the number of woody species.

On page 393 the variety of Cratægus coccinea should read macracantha, Dudley, instead of macrantha, Dudley.

Arnold Arboretum. *J. G. Jack.*

Foreign Correspondence.

London Letter.

Sternbergia macrantha.—Bulbs of this beautiful species have lately been received at Kew from Asia Minor, and they are now flowering in the open border and in pots in a cool greenhouse. Imagine a Sternbergia with flowers as large as Colchicum speciosum, and colored rich golden-yellow, flaked with emerald-green, when they first open; moreover, it is likely to be as hardy as a Colchicum and as easily managed. According to Mr. Baker, S. macrantha was first described by J. Gay, and it has also been called S. latifolia, S. stipitata and S. Clusiana. It is a native of Asia Minor, Syria, Palestine, Persia, etc., but does not appear to have ever been in cultivation until now. The bulbs are globose, one and a half inches in diameter, with a neck six inches long, and the leaves, which are developed after the flowers, are strap-shaped and nearly an inch wide. This is a most valuable addition to hardy autumn-flowering bulbs.

Apodolirion Ettæ.—The genus Apodolirion is composed of six species of bulbous plants allied to Cooperia and Anoiganthus, and confined to south Africa. They have tunicated bulbs, with leaves and flowers not unlike those of Crocus, colored white or reddish. So far as I know, none of them have been introduced into cultivation until now, a few bulbs of A. Ettæ having lately been received at Kew from Natal, where this species is said to be rare and local. It was first described by Baker from a specimen collected in Natal and sent to Kew in 1885, the name being in compliment to a Miss Etta Stainbank. According to Mr. Baker, the flowers have a cylindrical tube three inches long, and a limb over an inch long, spreading as in Zephyranthes, and colored white and rose. It is an interesting little plant, and a worthy addition to the smaller favorites among Cape bulbous plants.

Kniphofia modesta.—The specific name of this really charming plant is calculated to mislead cultivators, for it is one of the most pleasing of the smaller species of Kniphofia. It has linear pale green, grassy leaves two feet or more long, with smooth edges, and an erect slender spike two feet high, the upper half clothed with tubular flowers half an inch long, pure white, with conspicuous golden-yellow anthers. It was first flowered at Kew five years ago, when it was received from Natal, where it was found by Mr. Medley Wood, who described it as an elegant white-flowered Kniphofia. At Kew it is grown in a cold frame, where it is planted out, and is now flowering freely; it is also thriving almost as well in a south border against the wall of a heated building. I can recommend this plant to cultivators interested in rare, distinct and pretty herbaceous perennials.

Dioscorea multiflora.—This elegant stove climber is now flowering profusely in a stove at Kew; its long pendent shoots hang from the roof, clothed with dark green, shining, cordate leaves and elegant compound axillary tassels of small greenish flowers, the fragrance of which is suggestive of ripe peaches. The stems are annual and the root-stock is tuberous. The plant grows freely, and will be useful for training against rafters or up pillars. It is quite as attractive as the best varieties of Asparagus, and will probably prove of value for decorative purposes. The stems are thin and wiry, and lend themselves to such uses as twining round epergnes, etc. The species is a native of Central America and the West Indies, but the Kew plants have been raised from seeds collected in Sierra Leone by Mr. Scott-Elliot, whither, no doubt, it had been carried at some time by traders or others in communication with west Africa and the West Indies.

Dendrobium Phalænopsis.—There are probably more plants in cultivation of this comparatively new species of Dendrobium than of any other, except, perhaps, D. nobile. It is a magnificent Orchid, and easily cultivated if kept in a hot moist stove. Its flowers are as beautiful in form as those of Phalænopsis amabilis, and far more variable. Messrs. Sander & Co. continue to import it from New Guinea in enormous quantities, advertising 8,000 plants of it for sale by auction next week. It is no longer necessary to employ the varietal name Schrœderianum for the plant, as it is the type, but showing great range of variation. It will be a good thing to reduce the name by one of its three titles, for the plant is certain to become a universal favorite, and the shorter name is better.

Comanthosphace sublanceolata.—This pretty Japanese labiate was described by Mr. Spencer Moore, in 1877, in the *Journal of Botany;* for plants of it we are indebted to Professor Sargent, who introduced it from Japan last year. It is sub-shrubby and bears terminal spikes of pretty white flowers. So far it has proved hardy at Kew, where it is now in flower. A figure of it has been prepared for publication in the *Botanical Magazine.*

Eurya Japonica and its variegated form are two well-known garden-plants which are popular with decorators. Their name, however, has always been open to doubt by botanists acquainted with the genus Eurya. Recently the variegated form flowered in a garden in Ireland, specimens of which were sent to Kew for determination. It proves to be a species of Cleyera, and may be C. ochnacea.

British-grown Fruit.—An exhibition of fruit at the Crystal Palace was arranged by the Royal Horticultural Society and took place a few days ago. It was a revelation of what can be done by capable cultivators in this country, even in an unfavorable season such as that now about over. The quality of the fruit was superb, probably better than can be seen anywhere out of Great Britain, the grapes, pine-apples and figs, as well as the apples, pears, peaches, plums, etc., being wonderfully well grown. It is not necessary, however, to hold such exhibitions to teach the laity that good fruit can be grown in Great Britain; that, I believe, is pretty generally understood already. But if something would be done to remedy the state of things which renders it impossible for fruit to be grown at a profit in this country, then exhibitions, such as that held at the Crystal Palace, would emphatically be worth while. At present we invite such wealthy establishments as the Queen's Garden at Frogmore, the Duke of Devonshire's at Chatsworth, the Rothschilds' at Gunnersbury and Messrs. J. Veitch & Sons, to bring collections of their best fruit to show the British public what can be done, and employ talkers to persuade the needy landowner and farmer that they can do likewise and make it pay. I am one of a considerable number who believe that fruit-growing is on a similar business basis with the production of wheat or beef in this country. The exhibitions are all very well, as also are the evidences of what can be done by skill, backed by wealth, in the way of growing fine fruit, but we advance no further in the direc-

tion of saving the industry of fruit-culture from ruin by foreign competition, nor, judging by the correspondence that has lately been published in the *Times* and other papers, does it appear likely that anything will be done.

The Forestry Conference.—This meeting, held at Chiswick last week, produced an exhibition of varied interest, and a number of papers of more or less importance as contributions to the literature of the subject. Probably there was more for the gardener than the forester in the exhibition itself, consisting, as it did, of collections of all kinds of hardy trees and shrubs, many of which were new or rare; but there was not much that the horticulturist could turn to account in the papers read and discussed. Mr. Thiselton Dyer, the Director at Kew, presided at the Conference, and he did not give any encouragement to the theorists who argue in favor of forestry in this country as a profitable undertaking. There are large tracts of land, large for England that is, which are planted with timber-producing trees, and which serve the double purpose of protection and picturesque effect in the landscape, the sale of the timber itself being of secondary importance. Forestry is hopeless in this country, but sylviculture is often worth while. It, therefore, may be that by preaching forestry to those interested in the land, they may be induced to pay more attention to the selection, planting and after-treatment of trees, which, if not likely to prove a direct source of profit nevertheless contribute largely to the value of surrounding land and to the beauty of the landscape. There is no room for forestry here; there is every need for large areas of trees and shrubs.

London. *W. Watson.*

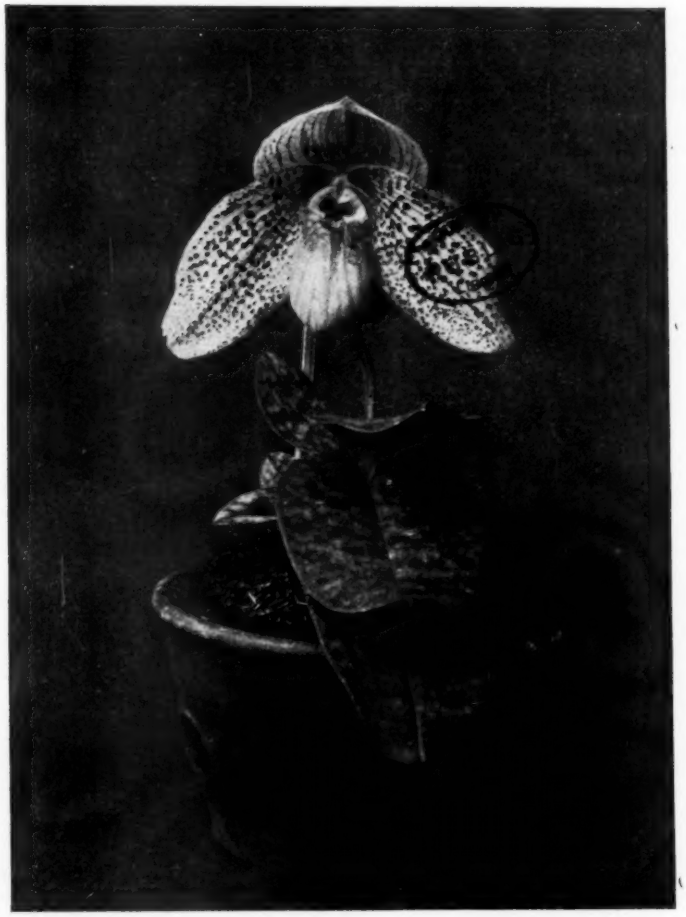

Fig. 67.—Cypripedium Arnoldiæ.

New or Little-known Plants.

Cypripedium Arnoldiæ.

THIS is one of the large-flowered, short-stemmed section, showing, in this respect, the distinctive character of its seed parent, C. bellatulum. After the completion of its first growth, which was of unusually slow development, the plant began to show the influence of the pollen parent, C. superciliare, and increased rapidly in size and produced its first spike with twin flowers.

The individual flowers measure three and a half inches across. The dorsal sepal is slightly concave, of a white ground color, furnished with lines of minute purple spots, the special portion marked with a number of short pea-green lines. The petals are broad and spreading, with slight undulation, ground color rosy white, the whole surface studded with minute rich purple spots. The influence of the pollen parent in the lip is very perceptible, both in shape and coloring, the upper portion and infolded lobes being suffused with a deep rose color, which changes into a light green toward the lower portion and veined throughout with a richer shade. The leaves are elliptic-oblong, with a light and dark green tessellation.

Cypripedium Arnoldiæ (see figure) originated in the nurseries of Messrs. Sander & Co., at St. Albans, England, and has been named in honor of Mrs. Hicks Arnold, of this city. It was exhibited recently before the Royal Horticultural Society of London, and obtained a first-class certificate, and is one of the best crosses yet obtained from C. bellatulum.

New York. *A. Dimmock.*

Plant Notes.

Habenaria carnea nivosa.—Three years ago (see vol. iv., page 487) we figured Habenaria carnea, an introduction from Singapore, which had just flowered at Kew. The plant has a neat habit and large, though delicate, flesh-pink flowers. A variety with white flowers received an award of merit during the summer from the Royal Horticultural Society, and since then we learn from the *Orchid Review* that this variety, which is called Nivosa, has made its appearance in several other collections, and we learn that the same form has appeared in this country. It seems to grow as rapidly as the type, and both plants are admirable companions for Habenaria militaris, of whose rich-colored flowers it was said that no English soldier could boast a jacket of a brighter scarlet. The leaves of Habenaria carnea are spotted with white on a ground color of pinkish gray, but the leaves of the new variety are green and unspotted.

Papaver Atlanticum.—A new perennial alpine Poppy from the Atlas Mountains, probably a form of P. rupifragum, is a vigorous-growing semi-dwarf species with long, narrow, deeply cut, somewhat hairy, light green leaves. The flowers, borne singly on graceful stems one and a half to two feet high, are about two inches in diameter and of a dark orange color. They are very fugacious, but are borne in succession from early summer until freezing weather. The plant blooms the first year from seed.

The Double White Colchicum.—This is, perhaps, the most attractive of the species and varieties of these autumn-flowering plants. Each bulb sends up numerous flowers in succession, and they prove very interesting and attractive in the border, especially if they are planted under a carpet of dwarf Sedums or other creeping plants which will serve as a foil and preserve the purity of the flowers during rains. The double white form is much more showy and more substantial than the single white,

and the color is more desirable than that of the lilac or other red-tinted ones, which is, unfortunately, inclined toward bluish tones.

Aster Tartaricus.—The perennial Asters are growing in popularity in this country, although they are not cultivated to the extent that they are in England and in some European countries, where, together with allied plants like Boltonia and Erigeron, they are known as Michaelmas Daisies. Our native species are very largely used, and as they hybridize easily, almost an infinite number of forms has been developed, varying from a very dwarf and compact habit to a stature eight feet tall or more. Good species, however, are not all natives of America. Europe furnishes such good types as A. acris, A. Amellus and its many choice varieties. Others come from the Himalayas, others still from China and Japan. More than three years ago (see vol. iv., page 196) we described and figured A. Tartaricus, a robust Asiatic species, which is just beginning to come into good flower. Only a few of our native Asters are still in bloom, but A. Tartaricus, when planted in a sheltered position, will keep flowering in this latitude almost until December. Its flowers are large and bright purplish blue, in a huge rather open panicle borne at the top of a stem six or eight feet high. A peculiarity of these stems is that they do not begin to develop until near the first of September, when they shoot up with great rapidity above the large lower leaves, which are sometimes two feet long. A rich soil is needed to support so rampant a growth, and if the appetite of the plant is humored it will grow into a noble specimen, and its flowers, when cut, will be invaluable for large decorations in this season when outdoor flowers are rare.

Micromeria rupestris.—Last year Mr. Gerard made a note of this plant, which he had raised from seed obtained from Monsieur Correvon's Alpine Garden in Geneva, and which gave flowering plants the first season. While it is not in any way a striking or a showy plant, it certainly deserves attention on account of its long period of bloom and other useful qualities. A plant of this Micromeria with which we are familiar, and which has been growing in an open border for seven or eight years past, and has never been moved or divided, began to flower in July this year, and now, after severe frost, is showing flowers as bright as ever. This specimen is a low sub-shrub which dies to the ground every winter, but every spring numerous prostrate stems radiate from it and, turning upward at the extremities, bear spikes two or three inches long of small white flowers with lavender shadings. By September the plant covers a circle two feet across, and its habit makes it an admirable one for a low border, and particularly for a rockery. The Micromerias are labiate plants, and the small leaves and stems of this species taste and smell exactly like Pennyroyal. It is perfectly hardy in this latitude.

Cultural Department.

Some Hardy Grasses.

In former years we grew Eulalia Japonica and its varieties in one large round bed. Early in November, last year, these were all taken up, the clumps of roots divided into small pieces and each sort separately replanted into specially prepared beds. The beds were made twelve feet in diameter, dug two feet deep, and heavily manured. The plants grew well last summer, and are unusually handsome at this time, with their large, feathery panicles of flowers. The type, E. Japonica, is the most vigorous grower, and its light brownish panicles are larger than any of its varieties. It is a tall, robust plant, seven to eight feet high, with graceful dark-green leaves over three feet long. The foliage of the varieties is more showy than that of the type. E. Japonica zebrina is a tall, handsome plant, with long arching, variegated leaves. The variegation is straw-colored and appears in transverse bands across the leaves. It is not a very robust plant, but when once established it makes an excellent bed. E. Japonica variegata is a pretty plant, with long graceful leaves, striped lengthwise white and green. E. gracillima univittata is a comparatively new addition to this genus. It surpasses all the others for its neatness and grace. It grows to a height of four feet, and its stems are thickly covered with long, narrow graceful leaves. Although its plumes are not quite so large as those of some of the other varieties, they are, nevertheless, quite noticeable at this time.

All the Eulalias mentioned are quite hardy here, and are especially desirable for planting in round beds on lawns, or for use among subtropical plants in the summer garden. They are easily increased by seeds or by division, either in spring or autumn. The variegated forms are increased by division of the roots, as the plants grown from seed generally revert to the normal green-leaved type. In their native country, Japan, the Eulalias cover immense tracts of land. In summer, when they are in flower, they are very graceful and beautiful, and in autumn their leaves turn to a fiery-red color.

Arundo donax is a tall, striking plant, but hardly as graceful and pleasing as the Eulalias, yet it has quite a tropical appearance, and adds much beauty to the garden when large clumps are used. It produces annually large, thick, Bamboo-like shoots, which attain a height of ten, twelve or fourteen feet. The long canes are clothed from bottom to top with large, lanceolate, arching leaves. There is a variegated form of this plant which is very ornamental, but it does not grow quite so tall nor is it quite so hardy as the type. Its large leaves are ribboned with white, and it is valuable either as a single specimen or when planted in large clumps. The Arundos like deep rich soil, and they are natives of the south of Europe.

Festuca glauca, often called Blue Grass, is a charming little Grass, and very ornamental. Although it comes from the south of Europe, it is quite hardy here. Its main features as a garden-plant are its distinct blue color and dense graceful habit. The leaves are from six to twelve inches long, and have a beautiful glaucous color. The flowers are not ornamental, and should be taken away as soon as they make their appearance, as this tends to make the grass more luxuriant and bright. For edging beds, where other tall Grasses are grown, it is especially desirable, and also for the rock-garden or border when used in tufts. It thrives in light rich soil, and can be divided any time during the spring or summer to increase the plants.

Phalaris arundinacea variegata, or Ribbon Grass, is a very ornamental grass in early summer, but in autumn it is not so pretty, since its leaves then have a rusty appearance. It will grow in any soil or situation, and spreads very rapidly. It is used here largely for edging beds of tall Grasses.

Botanic Garden, Harvard University. *Robert Cameron.*

Gloriosa superba.

In a late issue of Garden and Forest, J. N. G. inquires about the proper treatment of this beautiful climbing plant from Brazil, whose very name suffices to arouse interest and make every cultivator anxious to grow it. We have had Gloriosa superba for four years, and ever since the first year it has flowered annually, gaining strength each year, until now the bulbs occupy a ten-inch pot, and for the past month the plant has flowered abundantly. It is most interesting to watch the development of the coloring in the flowers. When the color first appears it is almost wholly yellow, then the tips of the petals turn to a brilliant scarlet, and finally all the yellow is merged into the scarlet of the upper portions. We also grow G. Plantii, and have flowered it this year, but it is quite inferior to the first-named in coloring, although it flowered early in summer and is now bearing capsules of seeds that are nearly ripe. If its early flowering qualities are constant it will be worth growing for that alone. We have found that Gloriosa tubers are somewhat erratic in their time of starting to grow; ours seem to take a longer period to start each year, and this makes the flowering time later, so much that they will eventually become winter-blooming. We have never experienced any difficulty in growing the Gloriosas; they are essentially warm-house plants, requiring the highest temperature admitted in glass houses, with plenty of moisture to keep down thrips and red spiders. Thrips are especially troublesome; it is easily understood that if the young shoot gets any check it is fatal to success for the current year, as the shoots are really the flower-stems, as in the Alströmerias and Bomareas. After flowering, the pots containing the bulbs are placed in a warm corner under the benches until the time for starting them on, when they are shaken out and put in rich soil to grow again. They are repotted once when well started and fed with liquid fertilizer frequently when about to flower. With rich soil, a

warm house and frequent spraying to keep down insects, there should be no difficulty in flowering the Gloriosas freely.

South Lancaster, Mass. *E. O. Orpet.*

MY experience may be helpful to J. N. G. concerning the treatment of Gloriosa superba. To commence with, the tubers should be given plenty of drainage. Fill a nine-inch pot one-third full of broken potsherds, then add a layer of rough compost, the rougher the better, then put in some good light, turfy loam; this should be hand-picked and all the loose soil discarded. With a liberal supply of clean, sharp sand the tubers should be planted deeply in the pot, and the pot then filled with the compost to within one inch of the rim. It is best to pot loosely, pressing the soil lightly with the hand. If this is done about the 1st of March, or just before the tubers commence growth, a light watering with tepid water may be given, but the soil should not be kept in a very wet condition. About twice a week will answer until the new growths commence to show, when more water may be given, but care should always be taken to avoid a sodden condition of the soil. The plants should be grown in a temperature of sixty-five degrees at night to seventy-five degrees in the day, with shade from the direct rays of the midday sun. After growth is completed and the foliage begins to turn, withhold water gradually, until the plants are dormant, then withhold water altogether until time to start them in the spring.

The plants are best rested in a house where the temperature does not fall below sixty degrees in winter. They do not need repotting often, as the tubers are best not disturbed. Scraping off a little of the surface soil and replacing it with fresh compost is all they require. I have grown them for several years in the same soil, and never give manure in any form, solid or liquid. With plenty of syringing on bright days and a good long rest in winter, I have never seen them fail to give an abundance of their curiously twisted and bright-colored flowers.

New York. *T. E.*

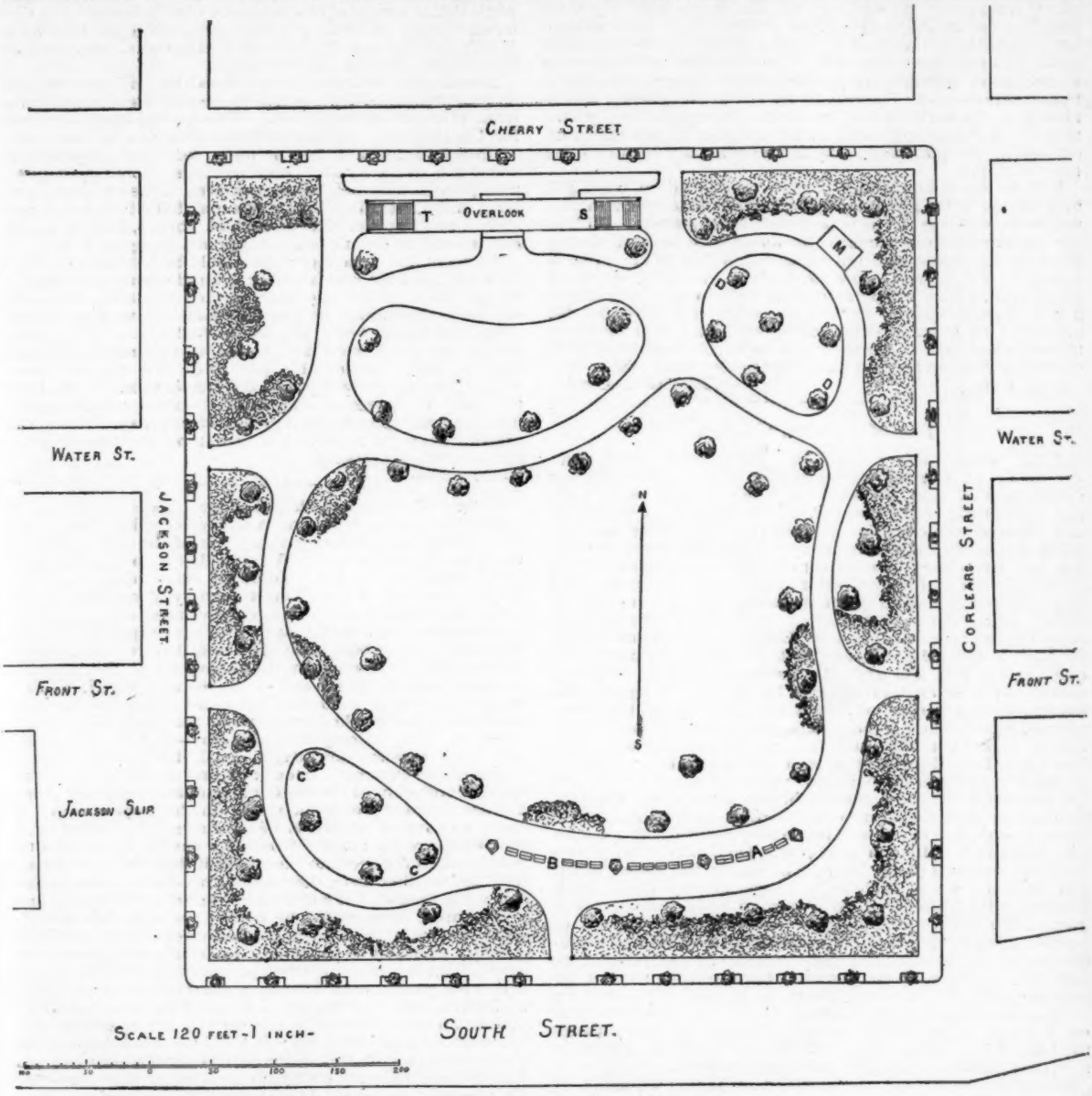

Fig. 68.—Plan of Corlears Hook Park, New York.—See page 422.

FOUR years ago I received a number of tubers of Gloriosa superba from India, and find that they flourish out-of-doors here with very little care or attention. They were tried in three different situations: (1) in high, dry sandy soil, with little humus or fertilization, but occasional watering; (2) in sandy soil rich in humus, near a watercourse and about three feet above water; and (3) in the muck of a drained pond about eighteen inches above water. In this last situation they grew and bloomed, but dwindled from year to year and were subject to disease; in the first they did moderately well and were healthy; but in the intermediate position they grow rankly, are covered with bloom all summer, and increase by abundant self-sown seedlings every year. The only care they receive is an occasional weeding and a little tying to make them cover their trellis evenly. The tubers are left in the ground undisturbed, as the winter is our dry season, though the soil where they are is always somewhat moist, and they do not start until our spring has gone and really hot weather has set in—some time in May.

Perhaps the failure with this plant, mentioned on page 408, may be due to too great drying or chilling of the tubers in winter, or the soil may not have been sufficiently porous. With us the soil-temperature is usually about seventy degrees during the growing season, and not much below that point, even in winter, a few inches below the surface. In May, when the plants start, the air-temperature ranges from sixty degrees to ninety degrees, and the atmosphere is generally dry, but the plants do not seem to be injured in the least by the excessive moisture and heat of the rainy season which make it so difficult for us to keep up a midsummer garden of any kind.

Oviedo, Florida. *Theodore L. Mead.*

The Vegetable Garden.

HIGH winds, heavy rains and early frosts have combined to give the kitchen-garden a somewhat unkempt appearance of late. As soon as Lima Beans, Sweet Corn and other tender crops are cut off they should be pulled up and wheeled to the rubbish-pile without delay. We find it a good plan to save a quantity of corn-stalks, and when protecting our Strawberry quarter with a coating of dry leaves in December we spread the stalks thinly over the leaves, and thus prevent the wind from scattering the leaves about. Celery, being the most important crop now in the ground, must receive constant attention. Except for late winter crops, we have a decided preference for blanching with boards over earthing up with soil after the ordinary fashion. With the advent of colder weather soil can be banked up against the boards, while a coating of leaves over the tops of the rows, pressed loosely among the heads, will preserve them from injury. Late varieties, such as Boston Market and Giant Paschal, will need earthing several times, care being taken in all cases to perform the operation when the plants are dry and the soil not sodden. Among other varieties tested this year for the first time, Kalamazoo is the most promising, and its clean growth, fine flavor and probable good keeping qualities will commend it for trial next year. De Candolle has grown the most vigorous of any kind we have, but has rotted badly, and does not seem likely to be of any service here. Paris Market, solid white, is a good second early variety, which gives large white heads as easily as White Plume, and of equally good flavor. Cauliflowers heading in should be examined every day or two. Caterpillars must be looked after, or they will quickly spoil the flowers. Hand-picking we find the best remedy. A leaf or two should be broken down over the flowers as a partial protection from frost. As a general rule, we have no frost severe enough to injure Cauliflowers until the 10th of November, about which date we find it advisable to lift the plants not headed up into cold frames.

Brussels Sprouts will be benefited by having a quantity of the lower leaves, many of which are decaying, broken off. As this vegetable will endure greater cold than others of the Brassica family, plants need not be lifted before December. Prickly Spinach will now be making good growth; the ground occupied by it should be stirred occasionally and weeds kept down. Ruta Bagas and other Turnips will make considerable growth still, and the hoe may with advantage be run through them yet. Beets, Parsnips and Carrots will be ready for digging, taking advantage of a time for lifting them when the soil is not pasty. We find these keep admirably packed in sand and laid on the floor of an open shed, a thick coating of dry leaves being placed over them when colder weather sets in. Parsnips will keep perfectly well in the ground where they have been growing, but are more convenient if lifted and stored with the other roots. Turnips can be similarly treated later on.

Tomatoes on trellises, if they have so far escaped frost, may be kept in bearing a little longer by being protected with a canvas or other covering; other fruit should be spread on the shelf in a warm, airy shed. By this means the supply can easily be prolonged into November. Plants for winter-fruiting, raised from seed sown in July, should now have their early fruit over half-swelled; an early gathering from these can be made early in November. Side laterals must be rubbed off regularly, and fertilizing of the blossoms no longer neglected if a regular production of fruit is desired. An additional sowing of seed, if made now, will give ripe fruit in March. May's Favorite, Nicholson's Hybrid, Chemin and Conference are all good kinds to use.

Lettuce, out-of-doors, when headed up, will now keep well, and a scattering of dry leaves over the plants will preserve them from injury from early frost. Where good heads are desired for Thanksgiving, the plants, if half-grown in the open, should be transferred to a frame at once, kept well supplied with water and freely aired. Later sowings should also now be transplanted into their winter quarters. Parsley may now be lifted and planted in a frame, when all but a few young leaves should be removed. Herbs, such as Thyme, Marjoram, Sage, etc., should be cut, tied in bunches and hung up to dry.

All spent and decaying crops should be removed to the rubbish heap and the hoe run over ground where any weeds are to be seen. The vegetable garden too often presents a slovenly appearance at the approach of winter, decaying crops and weeds being prominent features. Just as soon as we get our crops from the ground we commence to put manure on, and a considerable portion of it is dug over before winter, leaving the soil rough on the surface. This permits the frost to pulverize the ground more, not to speak of the improved appearance it gives to the garden. This autumn preparation helps to take off the strain on one's energies when spring work is pressing.

Taunton, Mass. *W. N. Craig.*

Violets.—These plants should all have been housed and well established by this time, and possibly flowering freely for the past month, as ours have been. One of the best features of the Lady Hume Campbell Violet is that it may be brought to good condition by the middle of September every year. Violet-plants are now making a quantity of runners, and it is the custom to pick them off and throw them away, depending on those produced in the spring for the propagation of stock for next year. A better way, and one that we have practiced successfully for some years, is to save all of the last crop of runners made in the fall and to put them in flats, in a mixture of equal parts of sand and leaf-mold. The flats should be placed in a shady cold frame, where they soon take root, and where they may remain until next May—that is, until planting-out time. Several advantages result from this plan; the Violet-plants that have been kept and forced to produce to their utmost either in frames or houses are weakened thereby, and are unfit for propagation, and may be thrown away. The stock we have in frames is never subjected to fire-heat, and the plants are sometimes frozen for several weeks at a time, but this does not seem to hurt them if they are not thawed out until the weather has moderated. Cold-frame space is also of less value than that of a heated house, where all spring propagation must of necessity be carried on, and this would be quite an item in a large establishment of a commercial grower, where it is necessary to handle the young stock several times. But the principal point in favor of this plan is that the young stock is strong, sturdy and not predisposed to disease, and, as a matter of fact, we have never had any disease on plants treated in this way. I am speaking now of the newer Lady Campbell; it has long been impossible to grow any of the Marie Louise in this locality, but our plants this year are a picture of health and better than ever before. This seems to be largely due to the variety used and to fall propagation, but getting them into their winter quarters by the last of August is important. Our heavy night dews about that time favors the spread of the dreaded spot, for which there is as yet no cure, if the attack is a bad one.

South Lancaster, Mass. *E. O. Orpet.*

Juneberry Success.—We are cultivating four named kinds of Juneberries, besides several native varieties, and of those which we have fruited the best is Success. It is dwarf in habit, seldom more than four feet high, and bears large quantities of large fruit. It is hardy here without protection, and has borne regularly and abundantly since it began to fruit three years ago. It is well worth cultivating in the home garden, where the fruit can be protected from birds, and I think it could be profitably grown for market. It is especially desir-

able for the drier portions of the Mississippi valley, on account of its great hardiness. I do not think it would be considered of great value where Blueberries are abundant, as the latter would probably be preferred by most people. In the northern part of this state there is a Juneberry which makes a small tree, and is called Suscutan by the Indians. It has not yet fruited with us.

Experiment Station, St. Anthony Park, Minn. *Samuel B. Greene.*

Tricyrtis hirta.—The rusty appearance of the leaves of this plant, spoken of on page 418, is not always caused by frost, since the plant is often disfigured before frost has touched it. It will seldom be found with perfect leaves when grown in established clumps. It is to be hoped that some of our vegetable pathologists will try to discover the cause of this unfortunate failing of a quaintly flowered plant.

Elizabeth, N. J. *J. N. G.*

Correspondence.

Aquatics in Central Park.

To the Editor of GARDEN AND FOREST:

Sir,—In the Loch in Central Park, at about One Hundred and Second Street, West, is probably the largest mass of Nelumbium speciosum in the country. These plants are in very vigorous health, and occupy a space of not less than an acre. They are so well naturalized that it has become necessary to repress their further spreading if any clear space of this water is to be reserved. It is unfortunate that this water is so masked by trees and shrubs that it is only seen by stray visitors, and it is impossible from any point of view to enjoy the full effect of the multitude of striking flowers borne over the beautiful foliage. All the waters of Central Park, except the aqueduct, are at a low level, and the full expanse of none of them can be enjoyed except from the foot-paths. In driving, one seldom gets more than a glimpse of water, even where handsome aquatic plants are freely used.

Much use of Nymphæas and other water-plants is made by the New York Park Department in available spaces. Many of these are familiar in the various city basins and to the pedestrians in Central Park. Plantings of hardy Nymphæas are also almost hidden in the Loch. There is a fine lot of Nelumbium speciosum in the Harlem Mere, which is also nearly planted out from the main upper drive. The Nymphæas, Devoniensis, chromatella and dentata, have been excellent this season in the fountain-basin on the terrace by the Lake; they were especially effective, as they were not crowded, and there was at all times the ample water-space about them which adds so much to the effectiveness of these plants.

Elizabeth, N. J. *J. N. G.*

The Buck Bush.

To the Editor of GARDEN AND FOREST:

Sir,—It had long been a mystery to me why Symphoricarpos vulgaris, the Indian Currant or Coral Berry, is called Buck Bush or Buckberry Bush in Kentucky, and, in fact, generally throughout the southern states, wherever the shrub is common. One day, on a botanical excursion, my comrade, a six-year old boy, exclaimed as we were passing through a field or open wood where this shrub grew abundantly, "See the Buck Bushes! Grandpa says that the deers used to feed on them a long time ago." If deer do feed on this shrub, or its berries, or if it was ever popularly supposed they did, this would account for the name. It would be interesting to hear further from the readers of GARDEN AND FOREST, if any of them have any knowledge on this point.

Bowling Green, Ky. *Sadie M. Price.*

Our Native Elders.

To the Editor of GARDEN AND FOREST:

Sir,—Will you permit me to say a word for the beauty of our native Elders, which seem to deserve a place in your "Plant Notes"? Sambucus racemosa, the Red-berried Elder, is seldom met with except as a wild shrub, while S. Canadensis, the common Elder, although sometimes seen in cultivated grounds, is not often left on account of its beauty, but sometimes for its useful properties, and generally because the owner has not found time to cut it down with other "brush." The two species side by side make a really fine show, as the scarlet fruit of S. racemosa is in perfection when S. Canadensis opens its creamy cymes. I have been struck with their united beauty when riding among the hills in Schuyler County, New York, where it is sometimes displayed against a background of bleached and weather-beaten Pine roots that have been set up for road-fences in the early settlement of the country. These "stump-fences," as they are called, have not an attractive name, but their involved and tangled roots are always curious, and when partially draped and garlanded with vines, while flowering plants grow in crevices and pockets full of soil, they become really picturesque features of this charming region. I always feel that Elders and Sumachs are neat enough in habit for the trimmest of dressed lawns; but, perhaps, they are too common for small places, where only select shrubs are admitted, still they are always useful in parks and extensive grounds; and I always feel hurt when they are cut down along the highways. Here, at least, they should be allowed to remain as roadside ornaments.

Klinger Lake, Mich. *Dorcas E. Collins.*

The Persimmon.

To the Editor of GARDEN AND FOREST:

Sir,—Some Persimmon-trees growing in great luxuriance before my windows are so attractive that I am induced to urge the more general planting of this tree in the northern states. It has, to my surprise, proved entirely hardy through the severest winters; so also have grafts of varieties from Virginia and Indiana and Missouri proved thoroughly able to endure twenty degrees below zero. The fruit is a great acquisition for our northern tables, coming in in November and December. It is said that there are varieties which ripen their fruit before frost, but, so far as my observation extends, the fruit is only agreeable after sharp frost, and then some varieties are first-rate dessert fruits. But the tree itself is beautiful in form and habit. The shade is dense and the color of the foliage is rich dark green. I did not find seedlings from fruit procured in St. Louis to be fertile. The flowers seem to be perfect, but, for some reason I am not yet able to discover, no fruit is set. It will be advisable to grow seedlings, and graft them from specially fine sorts. The Persimmon is inclined to sucker, but not in a troublesome way. The suckers coming at a distance from the tree can be utilized as stock plants if needed. I find the foliage of different sorts varies in color and shade and size of leaf, but in all cases it is dense and beautiful. The fruit, if picked before thorough freezing, can be kept in cold storage for several weeks. The foliage appears as late as that of the Butternut or later, and it is retained as late as that of the Apple. It is the only tree I know which puts out foliage late in spring and does not drop it early in autumn. The Ash, the Butternut, the Judas-tree, the Catalpas, all come late into leaf and the leaves fall early.

Clinton, N. Y. *E. P. P.*

Recent Publications.

Flore Coloriée de Poche à l'Usage du Touriste dans les Montagnes de la Suisse, de la Savoie, du Dauphiné, des Pyrénées, du Jura, des Vosges, etc. Par H. Correvon, Directeur du Jardin Alpin d'Acclimatation à Genève. Paris: Paul Klincksieck. 1894.

This convenient little manual of one hundred and sixty pages gives brief descriptions of 560 of the plants which the tourist is likely to encounter on the mountains of southern and south-western Europe. Of course, the descriptions are brief, but they are accurate, and they give such prominent and distinctive characters as will be most readily noticed by persons not far advanced in botanical knowledge. Besides the descriptions there are figures of 180 of the species described, figures fairly well drawn, and colored as accurately as one could expect in a cheap work of this sort; at least, the colors really help to identify the plants. These figures are generally reduced about one-third from the natural size of the plants. Besides the botanical and French, the German and English names of the figured plants are given, and all these names are very properly put in the index. Of course, this little handbook is not meant for the experienced botanist, and it makes no pretense of being a complete flora; but the ordinary tourist who cares to make a closer acquaintance with these mountain wild flowers will make no mistake if he puts it in his pocket. He may be disappointed if he attempts to identify some of the Ferns he finds, for this family is not so fully treated as most of the others, but the mountain Ferns are worth a book by themselves.

Notes.

We regret to say that by an accident the plates of the two new species of Ilex in the last issue of Garden and Forest were interchanged, so that the portrait of Ilex triflora appears as Ilex Californica, and vice versa.

A course of instruction in horticulture extending through the months of January, February and March, and supplemented by lectures on the chemistry of plant-life, soils, fertilizers, eonomic entomology and kindred subjects, is offered by the Pennsylvania State College. Such a brief tuition cannot make an accomplished horticulturist, but students who find it impossible to pursue a full college course of four years will certainly be incited by the short one to more careful study and the exercise of greater intelligence in the cultivation of plants. The institution is well officered, and the number of its students is increasing, many of them coming from neighboring states. Its post-office address is State College, Pennsylvania.

The early settlers of New Jersey were not slow to discover the peculiar value and uses of the cranberries which grow in the swampy sections of the Pines. Mahlon Stacy, writing from West Jersey in April, 1680, to his brother in Yorkshire, says that from "May till Michaelmas we have great store of very good wild fruit, as strawberries and hurtelberries, which are like our bilberries in England, but far sweeter, and very wholesome," and he adds: "the cranberries are much like cherries for color and bigness, and may be kept till fruit comes in again. An excellent sauce is made of them for venison, turkeys and other great fowl. They are better to make tarts than either gooseberries or cherries. We have them brought to our houses in great plenty by the Indians."

Some tests of insect poisons which are used largely in Alabama by Cotton planters have been made by the experiment station in that state, and one sample of what was sold for Paris green showed, upon chemical examination, an entire absence both of copper and of arsenic. Tests were applied for all the ordinary green coloring agents, without discovering traces of any of them, and finally it was shown that Prussian blue and chrome-yellow intimately mixed with each other and thoroughly incorporated with a large quantity of the commonest material, such as clay and chalk, produced a substance which corresponded precisely in color to Paris green, although it lacked the brightness of tint which characterizes the genuine article. The counterfeit can be made for about a cent a pound, and it is entirely worthless as an insecticide. High-grade Paris green frequently costs more than twenty cents a pound, so that the manufacturer of the fraudulent goods, no doubt, realized an enormous profit.

In a bulletin on the "Cultivation of Orchards," lately issued by Professor Bailey, it is stated, in relation to fertilizers, that potash is the chief element needed in the soil, particularly after trees come into bearing. This is usually supplied in the form of muriate of potash, of which some 500 pounds, or even more, may be used to the acre annually in mature orchards. Wood-ashes is also an admirable source of potash, and forty or fifty bushels of unleached ashes to the acre is a fair supply. Phosphoric acid is the element of next importance, and from 300 to 500 pounds of plain superphosphate may be applied annually to an acre. Preparations of bone, and, perhaps, the Thomas slag also, furnish phosphoric acid in available form. When lands are properly cropped, nitrogen can be obtained most cheaply for orchards by plowing under nitrogenous green manures. As nitrogen is a great promoter of growth, it should be used with some caution, for orchard-trees are grown for fruit rather than for timber.

A late bulletin from the Cornell Experiment Station states that the Apricot is already grown commercially to a considerable extent in western New York, and that the chief difficulties in the way of its cultivation are the curculio and the habit of early blossoming, which renders it liable to injury by late spring frosts. The curculio can be kept in check by jarring the trees in the same way that Plum and Peach trees are treated; while frost is best avoided by planting on high lands near a large body of water, or in some other place where cold exposure retards blooming. The Russian Apricots are somewhat hardier than the ordinary type, but the fruit is small and mostly poor when compared with our standard sorts. The varieties most prized for commercial planting in western New York are Smith's Early, Harris, Early Moorpark, St. Ambroise, Turkish, Montgamet, Royal and Moorpark. The root of the Apricot itself seems to be impatient of cold wet soils, and it is, therefore, not a safe stock for grafting in central New York. Where Plums flourish the common Plum is good stock; where the Peach will thrive this is the best stock, and the Apricot does well on it, whether nursery-budded or top-worked. As the Apricot thrives on various kinds of stock it is adapted to various kinds of soil. The cultivation, pruning and care of the Apricot are similar to those required for the Peach, and the two trees are about equally productive.

The last *Journal of Horticulture* which has come to hand contains the usual Rose analysis for the year, from which it appears that Mrs. John Laing headed the list of Hybrid Perpetuals in the number of times it was exhibited on winning stands; after which came Madame Gabriel Luizet and La France, three pink Roses. Next in order came Ulrich Brunner, A. K. Williams and Marie Baumann, three red Roses. Of the Roses introduced within six years which have made good showings in the exhibitions Gustave Piganeau, Madame Caroline Testout (Hybrid Tea), Jeannie Dickson, Margaret Dickson, Marchioness of Dufferin, Mrs. Paul, Bourbon and Marchioness of Londonderry are the most noteworthy. Among the Teas and Noisettes, Catherine Mermet still leads, followed in order by Countess de Nadaillac, the Bride, Innocente Pirola, Souvenir d'un Ami and Marie Van Houtte. Of the comparatively new Tea Roses, Ethel Brownlow, Madame Hoste, Ernest Metz, Souvenir de S. A. Prince and Cleopatra have the best record.

Eight or ten bulletins in regard to the Russian Thistle have been already issued by the Department of Agriculture and the experiment stations of Nebraska, North Dakota, Minnesota and Wisconsin, and this literature is now increased by Bulletin No. 36 of the Iowa Agricultural College, and Bulletin No. 35 from Professor Morrow, of the University of Illinois, in which last state, as well as in north-western Indiana, the imported weed seems to be already quite common. We are informed by Dr. Collier, of the Geneva Experiment Station, that the Thistle has been detected in this state about twenty-five miles south of Geneva, and in the *Country Gentleman* for last week a correspondent states that he has found it beside a highway near the Erie Railroad tracks, in the western part of New York. Of course, a weed which is so abundant in the north-west can easily be carried on railroad lines, especially those lines which transport cattle. It is now pretty generally understood, however, that this so-called Thistle, being an annual plant, can be killed if it is only cut off at the surface before it seeds. In the unfenced ranges of the west, where the plant rolls before the wind, like our Tumble Weeds, it can, no doubt, seed hundreds of acres very quickly. It is not difficult to subdue it in cultivated farms, but, after all, it is one more weed to fight, and as it is likely to become well known throughout the eastern states within a few years, it is advisable to destroy it wherever it is found. It is hardly necessary to repeat here that the plant is not a Thistle and does not even look like one. The seeds, like the flowers and leaves, are very small, and a single plant may produce as many as twenty-five thousand, and if allowed to scatter them it can infest a large area.

Considerable quantities of a few varieties of peaches are still coming from California, mainly the white Heath and Honey Cling, and the yellow Salway. They are sometimes offered in Jersey peach baskets at $1.50, retail. A few of the late Smock peaches, from western New York, are still to be had. German prunes, from New York state, sell for $1.50 for a six-quart basket. This large purple fruit and Coe's Late Red are the only fresh plums now in market, although some Kelseys, Silver prunes and Gros prunes, held in cold storage, are yet occasionally seen. Some Spanish pomegranates were sold on Monday, and cases which contained 105 fruits brought from $2.75 to $3.25. There are a few pomegranates from California in the market, but evidently the growers of that state have not yet learned to raise this fruit successfully—that is, if we are to judge from the specimens sent to this market, which are quite inferior in appearance and flavor to the imported ones. The supply of quinces from California has been limited this season, and the large, smooth, regular fruit now offered by a few dealers commands $3.00 a box. Pears of unusual size and beauty are now to be seen, and boxes of Easter Beurre, which average a pound apiece, can be had for $4.00, or something like ten cents each, at wholesale. The first large sale of Almeria grapes this season took place on Monday, when 11,000 barrels were disposed of at auction. Native Concord grapes bring twenty-five cents for a ten-pound basket, and selected bunches, cut with a piece of the woody cane, cost the same price for half the weight. Wintergreen berries are more abundant in our markets this year than ever before. They sell for fifteen cents a quart-box, at retail, and the price is maintained by their increased use in the bar-rooms of the city.